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THE STRATEGIC DEFENCE INITIATIVE

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THE STRATEGIC DEFENCE INITIATIVE

This documentation comprises two press articles on the Strategic Defence Initiative (SDI).

The first is entitled 'The President's Choice: Star Wars or Arms Control', and was written by McGeorge Bundy, George F. Kennan, Robert S. McNamara and Gerard Smith[1]. It criticises the proposal made by President Reagan for a Strategic Defence Initiative.

The second article is entitled 'Defense in Space is not Star Wars', and was written by Zbigniew Brzezinski, Robert Jastrow and Max M. Kampelman[2]. It supports the proposal for a SDI.

These articles comprise two of the most authoritative politico-military commentaries on the SDI proposal.

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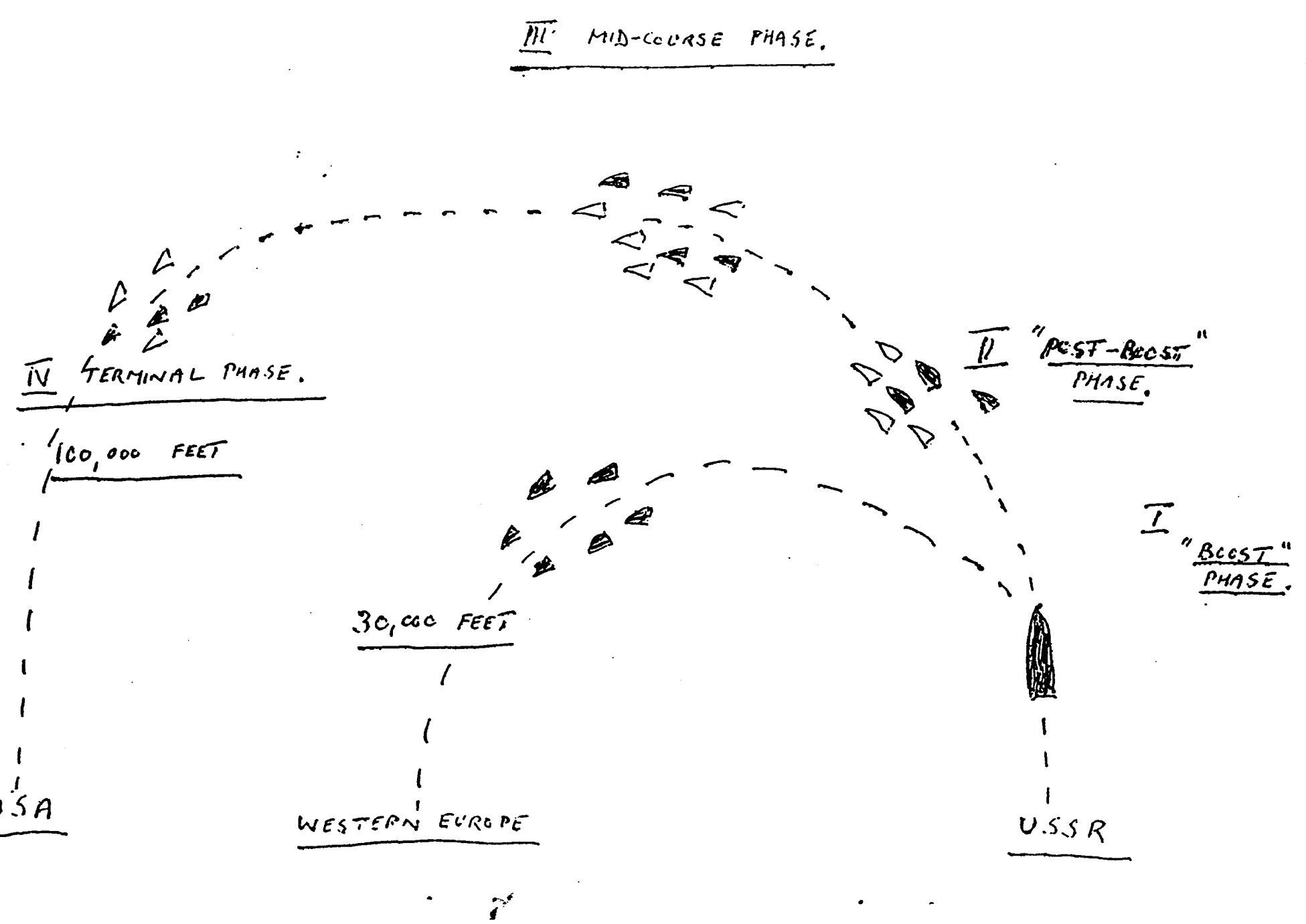
(1) Published in Foreign Affairs, Vol. 63, No. 2, Winter 1984-85, pp. 264-278

(2) Published in the New York Times Magazine, 27 January 1985, p. 28 ff.

THE FOUR LAYERS OF THE DEFENSIVE SYSTEM



"FOREIGN AFFAIRS" - volume 63 - nr 2 - winter 1984/85 (p. 264-278)

McGeorge Bundy
George F. Kennan
Robert S. McNamara
Gerard Smith

THE PRESIDENT'S CHOICE: STAR WARS OR ARMS CONTROL

The reelection of Ronald Reagan makes the future of his Strategic Defense Initiative the most important question of nuclear arms competition and arms control on the national agenda since 1972. The President is strongly committed to this program, and senior officials, including Secretary of Defense Caspar W. Weinberger, have made it clear that he plans to intensify this effort in his second term. Sharing the gravest reservations about this undertaking, and believing that unless it is radically constrained during the next four years it will bring vast new costs and dangers to our country and to mankind, we think it urgent to offer an assessment of the nature and hazards of this initiative, to call for the closest vigilance by Congress and the public, and even to invite the victorious President to reconsider. While we write only after obtaining the best technical advice we could find, our central concerns are political. We believe the President's initiative to be a classic case of good intentions that will have bad results because they do not respect reality.

This new initiative was launched by the President on March 23, 1983, in a surprising and quite personal passage at the end

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of a speech in praise of his other military programs. In that passage he called on our scientists to find means of rendering nuclear weapons "impotent and obsolete." In the briefings that surrounded the speech, Administration spokesmen made it clear that the primary objective was the development of ways and means of destroying hostile missiles—meaning in the main Soviet missiles—by a series of attacks all along their flight path, from their boost phase after launch to their entry into the atmosphere above the United States. Because of the central position the Administration itself gave to this objective, the program promptly acquired the name Star Wars, and the President's Science Advisor, George Keyworth, has admitted that this name is now indelible. We find it more accurately descriptive than the official "Strategic Defense Initiative."[1]

II

What is centrally and fundamentally wrong with the President's objective is that it cannot be achieved. The overwhelming consensus of the nation's technical community is that in fact there is no prospect whatever that science and technology can, at any time in the next several decades, make nuclear weapons "impotent and obsolete." The program developed over the last 18 months, ambitious as it is, offers no prospect for a leak-proof defense against strategic ballistic missiles alone, and it entirely excludes from its range any effort to limit the effectiveness of other systems—bomber aircraft, cruise missiles, and smuggled warheads.

The President's hopes are entirely understandable. There must be very few Americans who have never shared them. All four of us, like Mr. Reagan, grew up in a world without nuclear weapons, and we believe with passion that the world would be a much safer place without them. Americans should be constantly on the alert for any possibilities that can help to reduce

[1] There has been an outpouring of technical comment on this subject, and even in a year and a half the arguments have evolved considerably. Two recent independent analyses on which we have drawn with confidence are *The Reagan Strategic Defense Initiative: A Technical, Political, and Arms Control Assessment*, by Sidney D. Drell, Philip J. Farley and David Holloway, A Special Report of the Center for International Security and Arms Control, July 1984, Stanford: Stanford University, 1984; and *The Fallacy of Star Wars* (based on studies conducted by the Union of Concerned Scientists and co-chaired by Richard L. Garwin, Kurt Gottfried, and Henry W. Kendall), John Tirman, ed., New York: Vintage, 1984.

the nuclear peril in which we all live, and it is entirely natural that a hope of safety like the one the President held out should stir a warmly affirmative first response. But false hope, however strong and understandable, is a bad guide to action.

The notion that nuclear weapons, or even ballistic missiles alone, can be rendered impotent by science and technology is an illusion. It reflects not only technological hubris in the face of the very nature of nuclear weapons, but also a complete misreading of the relation between threat and response in the nuclear decisions of the superpowers.

The first and greatest obstacle is quite simply that these weapons are destructive to a degree that makes them entirely different from any other weapon in history. The President frequently observes that over the centuries every new weapon has produced some countervailing weapon, and up to Hiroshima he is right. But conventional weapons can be neutralized by a relatively low rate of kill, provided that the rate is sustained over time. The classic modern example is defense against nonnuclear bombing. If you lose one bomber in every ten sorties, your force will soon be destroyed. A pilot assigned to fly 30 missions will face a 95-percent prospect of being shot down. A ten-percent rate of kill is highly effective.

With nuclear weapons the calculation is totally different. Both Mr. Reagan's dream and his historical argument completely neglect the decisive fact that a very few nuclear weapons, exploding on or near population centers, would be hideously too many. At today's levels of superpower deployment—about 10,000 strategic warheads on each side—even a 95-percent kill rate would be insufficient to save either society from disintegration in the event of general nuclear war. Not one of Mr. Reagan's technical advisers claims that any such level of protection is attainable. They know better. In the words of the officer in charge of the program, Lieutenant General James Abrahamson, "a perfect defense is not a realistic thing." In response to searching questions from Senator Sam Nunn of Georgia, the senior technical official of the Defense Department, Under Secretary Richard DeLauer, made it plain that he could not foresee any level of defense that would make our own offensive systems unnecessary.

Among all the dozens of spokesmen for the Administration, there is not one with any significant technical qualifications who has been willing to question Dr. DeLauer's explicit statement that "There's no way an enemy can't overwhelm your

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defenses if he wants to badly enough." The only senior official who continues to share the President's dream and assert his belief that it can come true is Caspar Weinberger, whose zealous professions of confidence are not accompanied by technical support.

The terrible power of nuclear weapons has a second meaning that decisively undermines the possibility of an effective Star Wars defense of populations. Not only is their destructive power so great that only a kill rate closely approaching 100 percent can give protection, but precisely because the weapons are so terrible neither of the two superpowers can tolerate the notion of "impotence" in the face of the arsenal of the opponent. Thus any prospect of a significantly improved American defense is absolutely certain to stimulate the most energetic Soviet efforts to ensure the continued ability of Soviet warheads to get through. Ever since Hiroshima it has been a cardinal principle of Soviet policy that the Soviet Union must have a match for any American nuclear capability. It is fanciful in the extreme to suppose that the prospect of any new American deployment which could undermine the effectiveness of Soviet missile forces will not be met by a most determined and sustained response.

This inevitable Soviet reaction is studiously neglected by Secretary Weinberger when he argues in defense of Star Wars that today's skeptics are as wrong as those who said we could never get to the moon. The effort to get to the moon was not complicated by the presence of an adversary. A platoon of hostile moon-men with axes could have made it a disaster. No one should understand the irrelevance of his analogy better than Mr. Weinberger himself. As secretary of defense he is bound to be familiar with the intensity of our own American efforts to ensure that our own nuclear weapons, whether on missiles or aircraft, will always be able to get through to Soviet targets in adequate numbers.

The technical analyses so far available are necessarily incomplete, primarily because of the very large distance between the President's proposal and any clearly defined system of defense. There is some truth in Mr. Weinberger's repeated assertion that one cannot fully refute a proposal that as yet has no real content. But already important and enduring obstacles have been identified. Two are systemic and ineradicable. First, a Star Wars defense must work perfectly the very first time, since it can never be tested in advance as a full system. Second, it

must be triggered almost instantly, because the crucial boost phase of Soviet missiles lasts less than five minutes from the moment of launch. In that five minutes (which new launch technology can probably reduce to about 60 seconds), there must be detection, decision, aim, attack and kill. It is hard to imagine a scheme further removed from the kind of tested reliability and clear presidential control that we have hitherto required of systems involving nuclear danger.

There are other more general difficulties with the President's dream. Any remotely leak-proof defense against strategic missiles will require extensive deployments of many parts of the system in space, both for detection of any Soviet launch and, in most schemes, for transmission of the attack on the missile in its boost phase. Yet no one has been able to offer any hope that it will ever be easier and cheaper to deploy and defend large systems in space than for someone else to destroy them. The balance of technical judgment is that the advantage in any unconstrained contest in space will be with the side that aims to attack the other side's satellites. In and of itself this advantage constitutes a compelling argument against space-based defense.

Finally, as we have already noted, the President's program offers no promise of effective defense against anything but ballistic missiles. Even if we assume, against all the evidence, that a leak-proof defense could be achieved against these particular weapons, there would remain the difficulty of defense against cruise missiles, against bomber aircraft, and against the clandestine introduction of warheads. It is important to remember here that very small risks of these catastrophic events will be enough to force upon us the continuing need for our own deterrent weapons. We think it is interesting that among the strong supporters of the Star Wars scheme are some of the same people who were concerned about the danger of the strategic threat of the Soviet Backfire bomber only a few years ago. Is it likely that in the light of these other threats they will find even the best possible defense against missiles a reason for declaring our own nuclear weapons obsolete?

Inadvertent but persuasive proof of this failing has been given by the President's science adviser. Last February, in a speech in Washington, Mr. Keyworth recognized that the Soviet response to a truly successful Star Wars program would be to "shift their strategic resources to other weapons systems," and he made no effort to suggest that such a shift could be

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prevented or countered, saying: "*Let* the Soviets move to alternate weapons systems, to submarines, cruise missiles, advanced technology aircraft. Even the critics of the President's defense initiative agree that *those* weapons systems are far more stable deterrents than are ICBMs [land-based missiles]." Mr. Keyworth, in short, is willing to accept all these other means of warhead delivery, and he appears to be entirely unaware that by this acceptance he is conceding that even if Star Wars should succeed far beyond what any present technical consensus can allow us to believe, it would fail by the President's own standard.

The inescapable reality is that there is literally no hope that Star Wars can make nuclear weapons obsolete. Perhaps the first and most important political task for those who wish to save the country from the expensive and dangerous pursuit of a mirage is to make this basic proposition clear. As long as the American people believe that Star Wars offers real hope of reaching the President's asserted goal, it will have a level of political support unrelated to reality. The American people, properly and sensibly, would like nothing better than to make nuclear weapons "impotent and obsolete," but the last thing they want or need is to pay an astronomic bill for a vastly intensified nuclear competition sold to them under a false label. Yet that is what Star Wars will bring us, as a closer look will show.

III

The second line of defense for the Star Wars program, and the one which represents the real hopes and convictions of both military men and civilians at the levels below the optimistic President and his enthusiastic secretary of defense, is not that it will ever be able to defend *all our people*, but rather that it will allow us to defend *some of our weapons and other military assets*, and so, somehow, restrain the arms race.

This objective is very different from the one the President has held out to the country, but it is equally unattainable. The Star Wars program is bound to exacerbate the competition between the superpowers in three major ways. It will destroy the Anti-Ballistic Missile (ABM) Treaty, our most important arms control agreement; it will directly stimulate both offensive and defensive systems on the Soviet side; and as long as it continues it will darken the prospect for significant improvement in the currently frigid relations between Moscow and

Washington. It will thus sharpen the very anxieties the President wants to reduce.

As presented to Congress last March, the Star Wars program calls for a five-year effort of research and development at a total cost of $26 billion. The Administration insists that no decision has been made to develop or deploy any component of the potential system, but a number of hardware demonstrations are planned, and it is hoped that there can be an affirmative decision on full-scale system development in the early 1990s. By its very nature, then, the program is both enormous and very slow. This first $26 billion, only for research and development, is not much less than the full procurement cost of the new B-1 bomber force, and the timetable is such that Mr. Reagan's second term will end long before any deployment decision is made. Both the size and the slowness of the undertaking reinforce the certainty that it will stimulate the strongest possible Soviet response. Its size makes it look highly threatening, while its slowness gives plenty of time for countermeasures.

Meanwhile, extensive American production of offensive nuclear weapons will continue. The Administration has been at pains to insist that the Star Wars program in no way reduces the need for six new offensive systems. There are now two new land-based missiles, two new strategic bombers, and two different submarine systems under various stages of development. The Soviets regularly list several other planned American deployments as strategic because the weapons can reach the Soviet homeland. Mr. Reagan recognized at the very outset that "if paired with offensive systems," any defensive systems "can be viewed as fostering an aggressive policy, and no one wants that." But that is exactly how his new program, with its proclaimed emphasis on both offense and defense, is understood in Moscow.

We have been left in no doubt as to the Soviet opinion of Star Wars. Only four days after the President's speech, Yuri Andropov gave the Soviet reply:

> On the face of it, laymen may find it even attractive as the President speaks about what seem to be defensive measures. But this may seem to be so only on the face of it and only to those who are not conversant with these matters. In fact the strategic offensive forces of the United States will continue to be developed and upgraded at full tilt and along quite a definite line at that, namely that of acquiring a first nuclear strike capability. Under these conditions the intention to secure itself the possibility of destroying with the help of the ABM defenses the corresponding strategic systems of

the other side, that is of rendering it unable of dealing a retaliatory strike, is a bid to disarm the Soviet Union in the face of the U.S. nuclear threat.[2]

The only remarkable elements in this response are its clarity and rapidity. Andropov's assessment is precisely what we should expect. Our government, of course, does not intend a first strike, but we are building systems which do have what is called in our own jargon a prompt hard-target kill capability, and the primary purpose of these systems is to put Soviet missiles at risk of quick destruction. Soviet leaders are bound to see such weapons as a first-strike threat. This is precisely the view that our own planners take of Soviet missiles with a similar capability. When the President launches a defensive program openly aimed at making Soviet missiles "impotent," while at the same time our own hard-target killers multiply, we cannot be surprised that a man like Andropov saw a threat "to disarm the Soviet Union."[3] Given Andropov's assessment, the Soviet response to Star Wars is certain to be an intensification of both its offensive and defensive strategic efforts.

Perhaps the easiest way to understand this political reality is to consider our own reaction to any similar Soviet announcement of intent. The very thought that the Soviet Union might plan to deploy effective strategic defenses would certainly produce a most energetic American response, and the first and most important element of that response would be a determination to ensure that a sufficient number of our own missiles would always get through.

Administration spokesmen continue to talk as if somehow the prospect of American defensive systems will in and of itself lead the Soviet government to move away from strategic missiles. This is a vain hope. Such a result might indeed be conceivable if Mr. Reagan's original dream were real—if we could somehow ever deploy a *perfect* defense. But in the real world no system will ever be leak-proof; no new system of any sort is in prospect for a decade and only a fragmentary capability for years thereafter; numerous powerful countermeasures are readily available in the meantime, and what is at stake

[2] Cited in Sidney Drell *et al.*, *op. cit.*, p.105.

[3] Richard Nixon has analyzed the possible impact of new defensive systems in even more striking terms: "Such systems would be destabilizing if they provided a shield so that you could use the sword." *Los Angeles Times*, July 1, 1984.

from the Russian standpoint is the deterrent value of their largest and strongest offensive forces.

In this real world it is preposterous to suppose that Star Wars can produce anything but the most determined Soviet effort to make it fruitless. Dr. James Fletcher, chairman of an Administration panel that reviewed the technical prospects after the President's speech, has testified that "the ultimate utility . . . of this system will depend not only on the technology itself, but on the extent to which the Soviet Union agrees to mutual defense arrangements and offense limitations." The plain implication is that the Soviet Union can reduce the "utility" of Star Wars by refusing just such concessions. That is what we would do, and that is what they will do.

Some apologists for Star Wars, although not the President, now defend it on the still more limited ground that it can deny the Soviets a first-strike capability. That is conceivable, in that the indefinite proliferation of systems and countersystems would certainly create fearful uncertainties of all sorts on both sides. But as the Scowcroft Commission correctly concluded, the Soviets have no first-strike capability today, given our survivable forces and the ample existing uncertainties in any surprise attack. We believe there are much better ways than strategic defense to ensure that this situation is maintained. Even a tightly limited and partially effective local defense of missile fields—itself something vastly different from Star Wars—would require radical amendment or repudiation of the ABM Treaty and would create such interacting fears of expanding defenses that we strongly believe it should be avoided.

The President seems aware of the difficulty of making the Soviet Union accept his vision, and he has repeatedly proposed a solution that combines surface plausibility and intrinsic absurdity in a way that tells a lot about what is wrong with Star Wars itself. Mr. Reagan says we should give the Russians the secret of defense, once we find it, in return for their agreement to get rid of nuclear weapons. But the only kind of secret that could be used this way is one that exists only in Mr. Reagan's mind: a single magic formula that would make each side durably invulnerable. In the real world any defensive system will be an imperfect complex of technological and operational capabilities, full understanding of which would at once enable any adversary to improve his own methods of penetration. To share this kind of secret is to destroy its own effectiveness. Mr.

Reagan's solution is as unreal as his original dream, and it rests on the same failure of understanding.

There is simply no escape from the reality that Star Wars offers not the promise of greater safety, but the certainty of a large-scale expansion of both offensive and defensive systems on both sides. We are not here examining the dismayed reaction of our allies in Europe, but it is precisely this prospect that they foresee, in addition to the special worries created by their recognition that the Star Wars program as it stands has nothing in it for them. Star Wars, in sum, is a prescription not for ending or limiting the threat of nuclear weapons, but for a competition unlimited in expense, duration and danger.

We have come this way before, following false hopes and finding our danger greater in the upshot. We did it when our government responded to the first Soviet atomic test by a decision to get hydrogen bombs if we could, never stopping to consider in any serious way whether both sides would be better off not to test such a weapon. We did it again, this time in the face of strong and sustained warning, when we were the first to deploy the multiple warheads (MIRVs) that now face us in such excessive numbers on Soviet missiles. Today, 15 years too late, we have a consensus that MIRVs are bad for us, but we are still deploying them, and so are the Russians.

IV

So far we have been addressing the question of new efforts for strategic defense with only marginal attention to their intimate connection with the future of the most important single arms control agreement that we and the Soviet Union share, the Anti-Ballistic Missile Treaty of 1972. The President's program, because of the inevitable Soviet reaction to it, has already had a heavily damaging impact on prospects for any early progress in strategic arms control. It has thrown a wild card into a game already impacted by mutual suspicion and by a search on both sides for unattainable unilateral advantage. It will soon threaten the very existence of the ABM Treaty.

That treaty outlaws any Star Wars defense. Research is permitted, but the development of space-based systems cannot go beyond the laboratory stage without breaking the Treaty. That would be a most fateful step. We strongly agree with the finding of the Scowcroft Commission, in its final report of March 1984, that "the strategic implications of ballistic missile defense and the criticality of the ABM Treaty to further arms

control agreements dictate extreme caution in proceeding to engineering development in this sensitive area."

The ABM Treaty stands at the very center of the effort to limit the strategic arms race by international agreements. It became possible when the two sides recognized that the pursuit of defensive systems would inevitably lead to an expanded competition and to greater insecurity for both. In its underlying meaning, the Treaty is a safeguard less against defense as such than against unbridled competition. The continuing and excessive competition that still exists in offensive weapons would have been even worse without the ABM Treaty, which removed from the calculations of both sides any fear of an early and destabilizing defensive deployment. The consequence over the following decade was profoundly constructive. Neither side attempted a defensive deployment that predictably would have given much more fear to the adversary than comfort to the possessor. The ABM Treaty, in short, reflected a common understanding of exactly the kinds of danger with which Star Wars now confronts the world. To lose the Treaty in pursuit of the Star Wars mirage would be an act of folly.

The defense of the ABM Treaty is thus a first requirement for all who wish to limit the damage done by the Star Wars program. Fortunately the Treaty has wide public support, and the Administration has stated that it plans to do nothing in its five-year program that violates any Treaty clause. Yet by its very existence the Star Wars effort is a threat to the future of the ABM Treaty, and some parts of the announced five-year program raise questions of Treaty compliance. The current program envisions a series of hardware demonstrations, and one of them is described as "an advanced boost-phase detection and tracking system." But the ABM Treaty specifically forbids both the development and the testing of any "spaced-based" components of an anti-ballistic missile system. We find it hard to see how a boost-phase detection system could be anything but space-based, and we are not impressed by the Administration's claim that such a system is not sufficiently significant to be called "a component."

We make this point not so much to dispute the detailed shape of the current program as to emphasize the strong need for close attention in Congress to the protection of the ABM Treaty. The Treaty has few defenders in the Administration—the President thought it wrong in 1972, and Mr. Weinberger thinks so still. The managers of the program are under more

pressure for quick results than for proposals respectful of the Treaty. In this situation a heavy responsibility falls on Congress, which has already shown this year that it has serious reservations about the President's dream. Interested members of Congress are well placed to ensure that funds are not provided for activities that would violate the Treaty. In meeting this responsibility, and indeed in monitoring the Star Wars program as a whole, Congress can readily get the help of advisers drawn from among the many outstanding experts whose judgment has not been silenced or muted by co-option. Such use of independent counselors is one means of repairing the damage done by the President's unfortunate decision to launch his initiative without the benefit of any serious and unprejudiced scientific assessment.

The Congress should also encourage the Administration toward a new and more vigorous effort to insist on respect for the ABM Treaty by the Soviet government as well. Sweeping charges of Soviet cheating on arms control agreements are clearly overdone. It is deeply unimpressive, for example, to catalogue asserted violations of agreements which we ourselves have refused to ratify. But there is one quite clear instance of large-scale construction that does not appear to be consistent with the ABM Treaty—a large radar in central Siberia near the city of Krasnoyarsk. This radar is not yet in operation, but the weight of technical judgment is that it is designed for the detection of incoming missiles, and the ABM Treaty, in order to forestall effective missile defense systems, forbade the erection of such early warning radars except along the borders of each nation. A single highly vulnerable radar installation is of only marginal importance in relation to any large-scale breakout from the ABM Treaty, but it does raise exactly the kinds of questions of intentional violation which are highly destructive in this country to public confidence in arms control.

On the basis of informed technical advice, we think the most likely purpose of the Krasnoyarsk radar is to give early warning of any attack by submarine-based U.S. missiles on Soviet missile fields. Soviet military men, like some of their counterparts in our own country, appear to believe that the right answer to the threat of surprise attack on missiles is a policy of launch-under-attack, and in that context the Krasnoyarsk radar, which fills an important gap in Soviet warning systems, becomes understandable. Such understanding does not make the radar anything else but a violation of the express language of the

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Treaty, but it does make it a matter which can be discussed and resolved without any paralyzing fear that it is a clear first signal of massive violations yet to come. Such direct and serious discussion with the Soviets might even allow the two sides to consider together the intrinsic perils in a common policy of launch-under-attack. But no such sensitive discussions will be possible while Star Wars remains a non-negotiable centerpiece of American strategic policy.

Equal in importance to defending the ABM Treaty is preventing hasty overcommitment of financial and scientific resources to totally unproven schemes overflowing with unknowns. The President's men seem determined to encourage an atmosphere of crisis commitment to just such a manner of work, and repeated comparisons to the Manhattan Project of 1942–45, small in size and crystal-clear in purpose by comparison, are not comforting. On the shared basis of conviction that the President's dream is unreal, members of Congress can and should devote themselves with energy to the prevention of the kind of vested interest in very large-scale ongoing expenditures which has so often kept alive other programs that were truly impotent, in terms of their own announced objectives. We believe that there is not much chance that deployments remotely like those currently sketched in the Star Wars program will ever in fact occur. The mere prospect of them will surely provoke the Russians to action, but it is much less likely that paying for them will in the end make sense to the American people. The larger likelihood is that on their way to oblivion these schemes will simply cost us tens and even hundreds of billions of wasted dollars.[4]

In watching over the Star Wars budget the Congress may find it helpful to remember the summary judgment that Senator Arthur Vandenberg used to offer on programs he found wanting: "The end is unattainable, the means hare-brained, and the cost staggering." But at the same time we believe strongly in the continuation of the long-standing policy of maintaining a prudent level of research on the scientific possibilities for defense. Research at a level ample for insurance

[4] The Russians have their own program, of course. But they are not about to turn our technological flank in the technologies crucial for ABM systems. "According to the U.S. Department of Defense, the United States has a lead in computers, optics, automated control, electro-optical sensors, propulsion, radar, software, telecommunications, and guidance systems." Drell *et al.*, *op. cit.*, p. 21.

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against some Soviet surprise can be continued at a fraction of the cost of the present Star Wars program. Such a change of course would have the great advantage of preventing what would otherwise be a grave distortion of priorities not only in defense research but in the whole national scientific effort.

V

This has not been a cheerful analysis, or one that we find pleasant to present. If the President makes no major change of course in his second term, we see no alternative to a long, hard, damage-limiting effort by Congress. But we choose to end on a quite different note. We believe that any American president who has won reelection in this nuclear age is bound to ask himself with the greatest seriousness just what he wants to accomplish in his second term. We have no doubt of the deep sincerity of President Reagan's desire for good arms control agreements with the Soviet Union, and we believe his election night assertion that what he wants most in foreign affairs is to reach just such agreements. We are also convinced that if he asks serious and independent advisers what changes in current American policy will help most to make such agreements possible in the next four years, he will learn that it is possible to reach good agreements, or possible to insist on the Star Wars program as it stands, but wholly impossible to do both. At exactly that point, we believe, Mr. Reagan could, should, and possibly would encourage the serious analysis of his negotiating options that did not occur in his first term.

We do not here explore these possibilities in detail. They would certainly include a reaffirmation of the ABM Treaty, and an effort to improve it by broadening its coverage and tightening some of its language. There should also be a further exploration of the possibility of an agreement that would safeguard the peaceful uses of space, uses that have much greater value to us than to the Soviets. We still need and lack a reliable cap on strategic warheads, and while Mr. Reagan has asked too much for too little in the past, he is right to want reductions. He currently has some advisers who fear all forms of arms control, but advisers can be changed. We are not suggesting that the President will change his course lightly. We simply believe that he does truly want real progress on arms control in his second term, and that if he ever comes to understand that he must choose between the two, he will choose the pursuit of agreement over the demands of Star Wars.

We have one final deep and strong belief. We think that if there is to be a real step away from nuclear danger in the next four years, it will have to begin at the level of high politics, with a kind of communication between Moscow and Washington that we have not seen for more than a decade. One of the most unfortunate aspects of the Star Wars initiative is that it was launched without any attempt to discuss it seriously, in advance, with the Soviet government. It represented an explicit expression of the President's belief that we should abandon the shared view of nuclear defense that underlies not only the ABM Treaty but all our later negotiations on strategic weapons. To make a public announcement of a change of this magnitude without any effort to discuss it with the Soviets was to ensure increased Soviet suspicion. This error, too, we have made in earlier decades. If we are now to have renewed hope of arms control, we must sharply elevate our attention to the whole process of communication with Moscow.

Such newly serious communication should begin with frank and explicit recognition by both sides that the problem of nuclear danger is in its basic reality a *common* problem, not just for the two of us, but for all the world—and one that we shall never resolve if we cannot transcend negotiating procedures that give a veto to those in each country who insist on the relentlessly competitive maintenance and enlargement of what are already, on both sides, exorbitantly excessive forces.

If it can ever be understood and accepted, as a starting point for negotiation, that our community of interest in the problem of nuclear danger is greater than all our various competitive concerns put together, there can truly be a renewal of hope, and a new prospect of a shared decision to change course together. Alone among the presidents of the last 12 years, Ronald Reagan has the political strength to lead our country in this new direction if he so decides. The renewal of hope cannot be left to await another president without an appeal to the President and his more sober advisers to take a fresh hard look at Star Wars, and then to seek arms control instead.

NEW YORK TIMES MAGAZINE, 27 JANUARY 1985, p. 284

'DEFENSE IN SPACE IS NOT STAR WARS'.

DEFLECTING A NUCLEAR ATTACK, THE AUTHORS ARGUE, SHOULD NOT BE SEEN AS SCIENCE FICTION

BY ZBIGNIEW BRZEZINSKI, ROBERT JASTROW, MAX M. KAMPELMAN

Faith moves mountains. When it is in eternal religious values, faith is an indispensable strength of the human spirit. When it is directed toward political choices, it is often an excuse for an analytic paralysis.

Regrettably, our national debate over President Reagan's suggestion that the country develop a strategic defense against a Soviet nuclear attack is taking on a theological dimension that has no place in a realistic search for a path out of the world's dilemma. The idea of basing our security on the ability to defend ourselves deserves serious consideration. Certainly, the role of strategic defense was a major issue in the recent dialogue in Geneva between United States Secretary of State George P. Shultz and Soviet Foreign Minister Andrei A. Gromyko on new arms-control negotiations.

For many years, our search for security has been restricted to designing offensive weapons to deter aggression through fear of reprisals. We must not abandon nuclear deterrence until we are convinced that a better means is at hand. But we cannot deny that, for both the Soviet Union and the United States, the costs, insecurities and tensions surrounding this search for newer, more effective and more accurate nuclear missiles produce a profound unease that in itself undermines stability.

The conventional view is that stability in the nuclear age is based on two contradictory pursuits: the acquisition of increasingly efficient nuclear weapons and the negotiation of limits and reductions in such weapons. The United States is diligently pursuing both objectives, but the complexity of arriving at effectual arms control agreements is becoming apparent as more precise and mobile weapons, with multiple warheads, appear on both sides. Unlike ours, moreover, many Soviet missile silos are reloadable, and thus the number of silos does not indicate the number of missiles, further complicating verification.

We must never ignore the reality that the overwhelming majority of the Soviet strategic forces is composed of primarily first-strike weaponry. And given the large numbers of first-strike Soviet SS-17, 18 and 19 load-based missiles, no responsible American leader can make decisions about security needs without acknowledging that a Soviet first strike can become a practical option.

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The Russians could strike us first by firing the reloadable portion of their nuclear arsenal at our missiles, the Strategic Air Command and nuclear submarine bases, and if the surviving American forces (essentially nuclear submarines) were to respond, the Russians could immediately counter by attacking our cities with missiles from nonreloadable silos and, a few hours later, with whatever of their first-strike reloadable weapons had survived our counterattack. They are set up for launching three salvos to our one.

To us, this catastrophic exchange is unthinkable. But, with the strong probability that the American response would be badly crippled at the outset by a Soviet strike, some Russian leader could someday well consider such a potential cost bearable in the light of the resulting 'victory'. Furthermore, such an analysis might well anticipate that an American President knowing that a strike against our cities would inevitably follow our response to a Soviet first strike, might choose to avoid such a catastrophe by making important political concessions. No responsible American President can permit this country to have to live under such a threat, not to speak of the hypothetical danger of having to choose either annihilation or submission to nuclear blackmail. Hence the understandable and continual drive for more effective offensive missiles to provide greater deterrence.

The result is that weapons technology is shaping an increasingly precarious American-Soviet strategic relationship. For this reason, we urge serious consideration be given to whether some form of Strategic Defense Initiative (SDI) might not be stabilising, enhancing to deterrence and even helpful to arms control. To that end, we address the major issues in strategic defense from three points of view:

(i) The technical: Is a defense against missiles technically and budgetarily feasible?
(ii) The strategic: Is a defense against missiles strategically desirable? Does it enhance or diminish stability? Does it enhance or diminish the prospects for arms control and a nuclear-weapons build-down?
(iii) The political: What are the political implications of strategic defence for our own country and for our relations with our allies? What are the implications for the larger dimensions of our relationship with the Soviet Union? How do we seek the needed domestic consensus on a viable strategy?

A great deal has been written about the state of missile-defense technology. Some experts say the technology sought is unattainable, others that it is merely unattainable in this generation. Yet the promise of the Strategic Defense Initiative is real. Some of the technologies are mature and unexotic. Their deployment around the end of this decade would involve mainly engineering development. Technically, these vital defenses could be in place at this moment were it not for the constraints accepted by the United States in its adherence to the antiballistic missile treaty of 1972.

With development and some additional research, we can now construct and deploy a two-layer or double-screen defense, which can be in place by the early 1990's at a cost we estimate to be somewhere in the neighbourhood of $80 billion. A conservative estimate of the effectiveness of each layer would be 70 per cent. The combined effectiveness of the two layers would be over 90 per cent: Less than one Soviet warhead in 10 would reach its target - more than sufficient to discourage Soviet leaders from any thought of achieving a successful first strike.

The first layer, in the two-layer defense system - the 'boost-phase' defense - would go into effect as a Soviet first-strike missile, or 'booster' carrying multiple warheads rises above the atmosphere at the beginning of its trajectory. This boost-phase defense - based on interception and destruction by non-nuclear projectiles - would depend on satellites for the surveillance of the Soviet missile field and the tracking of missiles as they rise from their silos. These operations could only be carried out from space platforms orbiting over the Soviet Union. Because they are weightless in orbit, such platforms could be protected against attack by heavy armor, onboard weapons and manoeuverability.

After the booster has burned out and fallen away, the warheads are through space on their way to the United States. The second layer of the defense - the terminal defense - comes into play as the warheads descend. Interception would be at considerable altitude, above the atmosphere if possible. This second phase requires further engineering, already under way, because interception above the atmosphere makes it difficult to discriminate between real warheads and decoys. In the interim, interception can take place in the atmosphere, where differences in air drag separate warheads from decoys. In either event, destruction of the warheads would take place at sufficiently high altitudes, above 100,000 feet, so that there would be no ground damage from warheads designed to explode when approached by an intercepting missile.

Of the two layers in the defense, the boost phase is by far the most important. It would prevent the Russians from concentrating their warheads on such high-priority targets as the national-command authority (the chain of command, beginning with the President, for ordering a nuclear strike), key intercontinental-ballistic missile silos or the Trident submarine pens, because they could not predict which booster and which warheads would escape destruction and get through.

This fact is important. Simply a so-called 'point defense' of our missile silos, it has been suggested, would be sufficient to restore much of the credibility of our land-based deterrent, now compromised by 6,000 Soviet ICBM warheads. It is particularly necessary to protect the 550 silos containing our Minuteman III ICBM's, of which 300 have the highly precise Mark 12A warheads. These are the only missiles in the possession of the United States with the combination of yield and accuracy required to destroy hardened Soviet military sites and the 1,500 hardened bunkers that would shelter the Soviet leadership. But their very importance to us illustrates the difficulty of a point defense, because the value of the silos to us means they will be among the highest-priority targets in any Soviet first strike. The Russians can overwhelm any point defense we place around those silos, if they wish to do so, by allocating large numbers of warheads to these critical targets. But if we include a boost-phase defense to destroy their warheads at the time of firing, their objective becomes enormously more difficult to accomplish.

The boost-phase defense has still another advantage. It could effectively contend with the menace of the Soviet SS-18's, monster missiles twice the size of the 97.5-ton. MX. Each SS-18 carries 10 warheads, but probably could be loaded with up to 30. The Russians could thus add thousands of ICBM warheads to their arsenal at relatively modest cost. With numbers like that, the costs favour the Russians. But a boost-phase defense can eliminate all a missile's warheads at one time - an effective response to the SS-18 problem.

The likely technology for an early use of the boost-phase defense would use 'smart' nonnuclear projectiles that home in on the target, using radar or heat waves, and destroy it on impact. The technology is close at hand and need not wait for the availability of the more devastating but less mature technologies of the laser, the neutral particle beam or the electromagnetic rail gun. The interceptor rocket for this early boost-phase defense could be derived from air-defense interceptors that will soon be available, or the technology of antisatellite missiles (ASAT) launched from F-15 aircraft. These rockets could weigh about 500 pounds, the non-nuclear supersonic projectiles about 10 pounds.

Interceptor rockets would be stored in pods on satellites and fired from space. The tracking information needed to aim the rockets would also be acquired from satellites orbiting over the Soviet missile fields. The so-called 'space weapons' of strategic defense are indispensable for the crucial boost-phase defense. To eliminate them would destroy the usefulness of the defense.

We estimate that the cost of establishing such a boost-phase defense by the early 1990's would be roughly $45 billion. That price tag includes 100 satellites, each holding 150 interceptors - sufficient to counter a mass Soviet attack from all their 1,400 silos; plus four geosynchronous satellites and 10 low-altitude satellites dedicated to surveillance and tracking; plus the cost of facilities for ground-control communications and battle management.

The technology used for the terminal defense could be a small, nonnuclear homing interceptor with a heat-seeking sensor, which would be launched by a rocket weighing one or two tons and costing a few million dollars each. Interception would take place above the atmosphere, if possible, to give wider 'area' protection to the terrain below. These heat-seeking interceptors can be available for deployment in about five years if a decision is reached to follow that course. One concept for this technology was tested successfully last June by the Defense Department, when an intercepting missile zeroed in on an oncoming warhead at an altitude of 100 miles and destroyed it.

The technology for a terminal defense within the atmosphere would be somewhat different, but would probably also depend on heat-seeking missiles. The cost of this terminal layer of defense would be about $15 billion and include $10 billion for 5,000 interceptors, plus $5 billion for 10 aircraft carrying instruments for tracking of the Soviet warheads.

The estimated $60 billion for this two-layer defense is a ball-park figure, of course. However, even with its uncertainties, it is surely an affordable outlay for protecting our country from a nuclear first strike.

To be sure, the above is not an attractive option to those who place all their eggs in the arms-control basket and underestimate the immense difficulty of attaining an effective and truly verifiable pact. It is also not appealing to those wedded to the idea that it is best to assure survival by simply maintaining the perilous balance of terror between the United States and the Soviet Union. We favour energetically pursuing arms-control negotiations and seeking to achieve credible deterrence, but these options by themselves are unfortunately not as likely to provide a more secure future as the alternative strategy of mutual security combining defense against missiles with retaliatory offense.

The simplest and most appealing option, quite naturally, is comprehensive arms control. Large reductions in both launchers and warheads, as well as effective restrictions on surreptitious deployment or qualitative improvements, would enhance nuclear stability and produce greater mutual confidence. It would, if properly negotiated and effectively monitored, enhance mutual survival.

How likely is such a future? Some progress in arms control is probably possible, but genuinely effective arms control would require that: (1) there be a restraint imposed on qualitative weapons enhancement; (2) mobile systems, relatively easy to deploy secretly, be subject to some form of direct verification; (3) a method be devised for distinguishing nuclear-armed and nonnuclear cruise missiles, and (4) monitoring arrangements be devised for preventing surreptitious development, testing and deployment of new systems. So far, the Soviet record of compliance with the SALT I and SALT II accords is sufficiently troubling to warrant skepticism regarding the likelihood of implementing any such complex and far-reaching agreement.

Moreover, such an agreement would have to recognise that it is no longer possible to limit space-based systems without imposing a simultaneous limit, along the above lines, on terrestrially deployed systems, which present the greater threat to survival. After all, the space-based defenses include no weapons of mass destruction and no nuclear weapons. And it should be some cause for concern to note the Soviet insistence on prohibiting space-based defensive systems, the only method now available to inhibit the first-strike use of land-based Soviet offensive systems.

Finally, a comprehensive and genuinely verifiable agreement, limiting both qualitatively and quantitatively the respective strategic forces, on earth and in space, will require a much more felicitous political element than currently exists. Negotiations may lead to such improvement, but in the setting of intense and profound geopolitical rivalry, how realistic is it to expect in the near future accommodation sufficient to generate the political will essential for a genuine breakthrough in arms-control negotiations? The mere mention of Afghanistan, Nicaragua, Sakharov and Soviet violations of the humanitarian provisions of the Helsinki Final Act dramatise the depths of the problem. There may be no direct negotiating linkage between these acts of Soviet misconduct and arms control, but their political inter-action is evident.

This is why there is currently such an emphasis on maintaining peace via the doctrine of deterrence based on mutual assured destruction, called MAD. But what does this mean in an age when weapons are becoming incredibly precise, mobile and difficult to count? In the absence of a miraculous breakthrough in arms control, the only possible protection within the framework of the deterrence approach is to stockpile more offensive systems. This is in part what we are doing. But how many of such systems will be needed in the likely conditions of the next decade? If Soviet strategic forces continue to grow both quantitatively and qualitatively, our country will have to deploy, at enormous cost, probably no fewer than 1,500 to 2,000 mobile Midgetmen to preserve deterrence. How will they be deployed? Where? And at what cost? And will the Soviet Union and the United States be more or less secure with the deployment of such precise weaponry capable of effective pre-emption? The Soviet answer is clear: The Russians are busy enhancing the survivability of their leadership and of their key facilities by hardening, dispersal and deception.

This second traditional alternative, mutual assured destruction, cannot be an acceptable, long-run option, although it is a necessary policy in the absence of an alternative, given the dynamics of weapons technology. Thus, a new third option,the Strategy of Mutual Security, must be explored as preferable. The combination of defense against space missiles with retaliatory offense in reserve enhances deterrence.

And it does not compromise stability, even if only the United States were initially to have such a strategic defense. The deployment of the systems described above would not give us absolute protection from Soviet retaliation against a possible first strike by us, a reasonable though misplaced Soviet concern. Furthermore, the Russians know we are not deploying first-strike counterforce systems in sufficient numbers to make a first strike by us feasible. In any case, one can be quite certain that the Russians will also be moving to acquire an enhanced strategic defense, even if they do not accept President Reagan's offer to share ours. Indeed, they are doing so now and have been for some time.

As our strategic space-defense initiative expands incrementally, it should be realistically possible to scale down our offensive forces. Such a transition, first of the United States and eventually of the Soviet Union, into a genuinely defensive posture, with neither side posing a first-strike threat to the other, would not only be stabilising but it would also be most helpful to the pursuit of more far-reaching arms-control agreements. Strategic defense would compensate for the inevitable difficulties of verification and for the absence of genuine trust by permitting some risk-taking in such agreements. This is another reason why strategic defense should not be traded in the forthcoming negotiations in return for promises that can be broken at any time.

No significant public policy can be carried out in a democracy without being fully discussed and accepted by the broad polity. Nor can an interested public be expected to resolve disputes among experts as to questions of technical feasibility. The current debate over President Reagan's initiative for a strategic defense programme suffers from that conflict among scientists. It is important to clarify this issue.

We can begin a two-tiered strategic defense that would protect command structure as well as our missiles and silos and thus discourage any thoughts by the Soviet military that a first-strike effort would be effective. Some within the scientific community minimise the importance of this technical feasibility and emphasise instead the view that it is scientifically impossible today to provide a strategic defense that will protect our cities. Such a broad defense of populations is today not feasible, but it is prudent for our society to keep in mind the rising tide of technical and scientific advances so rapidly overwhelming the 20th century.

The 'impossible' is a concept we should use with great hesitation. It is foolhardy to predict the timing of innovations. We are persuaded that the laws of physics do not in any way prevent the technical requirements of a defensive shield that would protect populations as well as weapons. A total shield should remain our ultimate objective, but there is every reason for us to explore transitional defenses, particularly because the one we have discussed would serve to deter the dangers of a first strike. Defenses against ballistic missiles can be effective without being 'perfect' and the technology for this is nearly in hand.

Society must also not forget that ever since the beginning of the scientific age, the organised scientific community has not had a particularly good record of predicting developments that were not part of the common wisdom of the day. In 1926, for example, A.W. Bickerton, a British scientist, said it was scientifically impossible to send a rocket to the moon. In the weapons field, United States Adm. William D. Leahy told President Harry S. Truman in 1945: 'That [atomic] bomb will never go off, and I speak as an expert in explosives'. And Dr. Vannevar Bush, who directed the Government's World War II science effort, said after the war that he rejected the talk 'about a 3,000 mile rocket shot from one continent to the other carrying an atomic bomb ... and we can leave that out of our thinking.' In the strategic area, as late as 1965, the capable Secretary of Defense Robert S. McNamara wrote: 'There is no indication that the Soviets are seeking to develop a strategic force as large as our own'.

Our debate and our discussion, furthermore, must not ignore what the Russians, who have always understood the need for defenses, are doing in space. They have spent more on strategic defensive forces since the anti-ballistic missile (ABM) treaty was signed in 1972 than on strategic offensive forces. Their antisatellite programme began nearly two decades ago. The Soviet military is now working aggressively on a nationwide missile-defense system; and it now appears ready to deploy a system capable of defending the country not only against aircraft, but also many types of ballistic missiles. Clearly the Soviet work in strategic defense has taken place in spite of ABM treaty provisions. The large radar installation in central Siberia expressly violates that treaty with us. Yet the planning for it must have begun many years ago.

The recent Geneva meeting must be considered a major productive result of President Reagan's March 1983 speech announcing that we would begin developing a strategic defense initiative. We are reminded that in 1967 President Lyndon B. Johnson proposed to Prime Minister Aleksei N. Kosygin a ban on ABM's, which was flatly rejected. In 1969 President Nixon proposed to the Congress that our country begin such an ABM programme because the Russians showed little desire to join us in prohibiting such weapons. Shortly after Congress approved that programme, the Russians embraced the idea of an ABM treaty. Had our Government not announced its SDI programme we might still be in the cold storage of the Soviet freeze precipitated by their walking out of the Geneva negotiations.

Arms control has been said to be at a dead end, and the stalemate has reflected an impasse in thought and in conception. Our present policy requires both us and the Soviet Union to rely on a theory of mutual annihilation based on a strategic balance of offensive weapons. The American approach has been to depend on deterrence alone and not on defending ourselves from Soviet offensive weapons, while the Russians have made it clear by their actions that they intend to defend themselves against our missiles. In any event, what is clear is that mankind must find ways of lifting itself out of this balance of terror. Mutual assured destruction must be replaced by mutual assured survival. Our safety cannot depend on our having no defense against missiles. The proper role of government is to protect the country from aggression, not merely avenge it. It is astounding that a President should be faulted for seeking a formula and an approach that will protect us from the continual threats and terrors coming from the volatile vagaries of adventurism and miscalculation.

Even if a perfect defense of our population should be impossible to achieve - and none of us can be certain of that - the leaders of our Government have a responsibility to seek defense alternatives designed to complicate and frustrate aggression by our adversaries. The very injection of doubt into their calculations strengthens the prospect of hesitation and deterrence. It may not be possible to destroy the world's ballistic missiles, but if we can return them to the status of a retaliatory deterrent rather than a pre-emptive strike we will have reduced the need for the existing large arsenal and thereby the threat of war.

The argument has been made that the SDI is politically harmful because our North Atlantic Treaty Organisation allies have not received the initiative with any enthusiasm. Their skepticism is an understandable initial reaction. First of all, our allies were taken by surprise by the President's March proposal of a Strategic Defense Initiative. At times, secret discussions are necessary, but doubtless allied cooperation will be forthcoming in direct proportion to timely and honest consultation. Furthermore, European political leaders feel under great pressure from an activist peace movement that emphasises traditional arms-control negotiations as a major objective. A new approach, which the Russians criticise as hostile, is, therefore, looked upon as troubling, regardless of its merit.

As to the substance of the initiative, coupling our national security interest with that of our allies is a foundation of NATO defense. Any tendency toward decoupling produces great concern on their part. Western European leaders look upon all security proposals with that criterion in mind. Should America technically succeed in providing a shield against missiles, Europeans wonder whether they would then not be left in an exposed position, facing a superior Soviet conventional military force.

The concerns may be understandable, but will diminish with time and discussion. First of all, President Reagan's call for strategic defense brought the Russians back to the Geneva negotiating table. More important, however, it will become increasingly evident to our friends, as some of the confusion about the technology dissipates, that the ability of the United States to protect its missiles immeasurably strengthens our power to deter and thereby serves to protect our allies. Indeed, such a system is expected to be at least as effective against the SS-20's aimed at western Europe as it is against ICBM's. Finally, a development pulling the world away from the precipice of nuclear terror goes far to help create an encouraging atmosphere for dialogue and agreement, a vital prerequisite for peace.

In light of the above, we reach two basic conclusions:

(1) Developing a stabilising, limited two-tier strategic defense capability is desirable and called for by the likely strategic conditions immediately ahead. Such a deployment would be helpful both in the military and in the political dimensions. It is a proper response to the challenge posed by political uncertainties and the dynamics of weapons development. The two-layered defense described here can be deployed by the early 1990's. Americans will rest easier when that limited defense is in place, for it will mean that the prospect of a Soviet first strike is almost nil.

(2) A three- or four-layer defense, using such advanced technologies as the laser now under investigation in the research phase of the Strategic Defense Initiative, may become a reality by the end of the century. If this research shows an advanced system to be practical, its deployment may well boost the efficiency of our defense to a level so close to perfection as to signal a final end to the era of nuclear ballistic missiles. A research programme offering such enormous potential gains in our security must be pursued, in spite of the fact that a successful outcome cannot be assured at this juncture.

The current debate is necessary. There are many questions, technical and political, ahead of us. For the debate to be constructive, however, we must overcome the tendency to politicise it on a partisan basis. Our objectives should be to find a way out of the current maze of world terror. The President's initiative toward that end is a major contribution to arms control and stability. The aim of making nuclear weapons impotent and absolete should be encouraged and not savaged.
